



**BAKKEN PIPELINE PROJECT US  
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**Cultural  
Resources**

**Kadrmass  
Lee &  
Jackson**  
Engineers Surveyors  
Planners



**Bakken Expansion Pipeline:  
A Class III Cultural Resource Inventory,  
Burke County,  
North Dakota**

Prepared For:  
**Enbridge Pipeline (North Dakota), LLC**  
**Houston, Texas**

Principal Investigator:  
**Jennifer L. Harty**

Prepared By:  
**Duane Klinner and Jennifer L. Harty**  
**Kadrmass, Lee & Jackson**  
**Bismarck, North Dakota**

**Report of Investigation: 1136**

**July 2010**

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County	Township	Range	Section	SU
BK	162	90	30, 31	SO
BK	162	91	6, 7, 8, 15, 16, 17, 22, 23, 24, 25	SO
BK	162	92	1, 2, 3	SO
BK	163	92	34	SO

**BAKKEN EXPANSION PIPELINE:  
A CLASS III CULTURAL RESOURCE INVENTORY,  
BURKE COUNTY, NORTH DAKOTA**

Prepared For:  
**Enbridge Pipelines (North Dakota), LLC**  
**Houston, Texas**

**Jennifer L. Harty**  
Principal Investigator

Prepared By:  
**Duane Kliner and Jennifer L. Harty**  
**Kadrmass Lee & Jackson**  
**Bismarck, North Dakota**

**Report of Investigation: 1136**

**July 2010**

## **ABSTRACT**

Enbridge Pipelines (North Dakota) LLC, is evaluating a project to install a new pipeline system in Burke County, North Dakota. The new installation stretches roughly 10.9 miles from northwest of the town of Lignite to directly southeast of the town of Woburn.

Between May 12 and May 15, 2010, Kadrmas, Lee & Jackson conducted an intensive inventory on the 10.9 mile proposed pipeline. The width of the survey corridor was 250' wide. A total of 330.3 acres was inventoried for the proposed undertaking.

No previously recorded cultural resources are located within the proposed pipeline corridor, and no new cultural resources were encountered. Kadrmas, Lee & Jackson recommends a finding of *No Historic Properties Affected* for the proposed undertaking.

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## INTRODUCTION

Enbridge Pipelines (North Dakota), LLC contracted Kadrmas, Lee, & Jackson (KL&J) to conduct a cultural resource inventory for a proposed pipeline in Burke County, North Dakota (Figures 1, 2, 3, and 4). The pipeline crosses through 16 legal sections (Table 1). The inventory was conducted by Jennifer L. Harty, Principal Investigator, Michael Shropshire, and Nina Kafferlin on May 12 through May 15, 2010. A corridor 10.9 miles long by 250' wide was inventoried to Class III standards. No previously documented or newly documented cultural resources were recorded during the inventory.

Table 1: Legal Location of Pipeline Corridor			
County	Township	Range	Section
Burke	162	90	30, 31
Burke	162	91	6, 7, 8, 15, 16, 17, 22, 23, 24, 25
Burke	162	92	1, 2, 3
Burke	163	92	34

## ENVIRONMENTAL SETTING

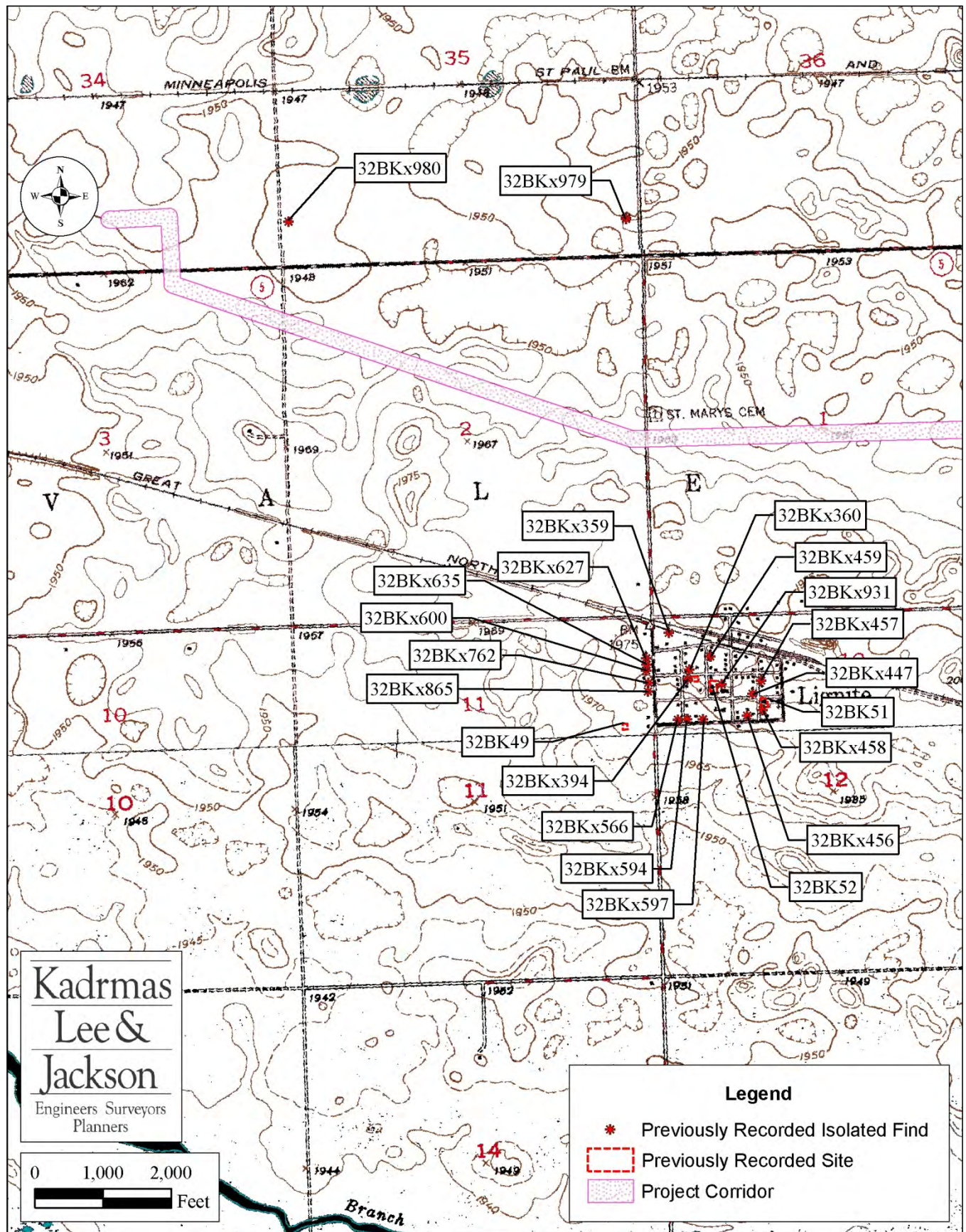
The entirety of the project area is located within the Souris River Study Unit (#11). The study unit is defined and delineated in the *North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component* (SHSND 2008: 11.1-11.72). The SHSND (2008) document presents a generalized description or overview of the physiographic and cultural setting for the study unit, along with information on the previous research conducted within the study units. The following discussion is a more localized description of the environmental setting of the project.

### Topography

The Souris River Study Unit is located in north-central North Dakota. The study unit is bordered by the Saskatchewan and Manitoba borders to the north. The Sheyenne River and Northern Red River study units border it to the east, and the Garrison and Southern Missouri River study units border it to the south. Topography within the Souris River Study Unit, as described by the SHSND (2008), is primarily identified as the Central Lowlands and the Great Plains. As such, the area varies from ground moraine of exhibiting generally low relief with numerous potholes, to knob and kettle glaciated terrain with numerous sloughs.

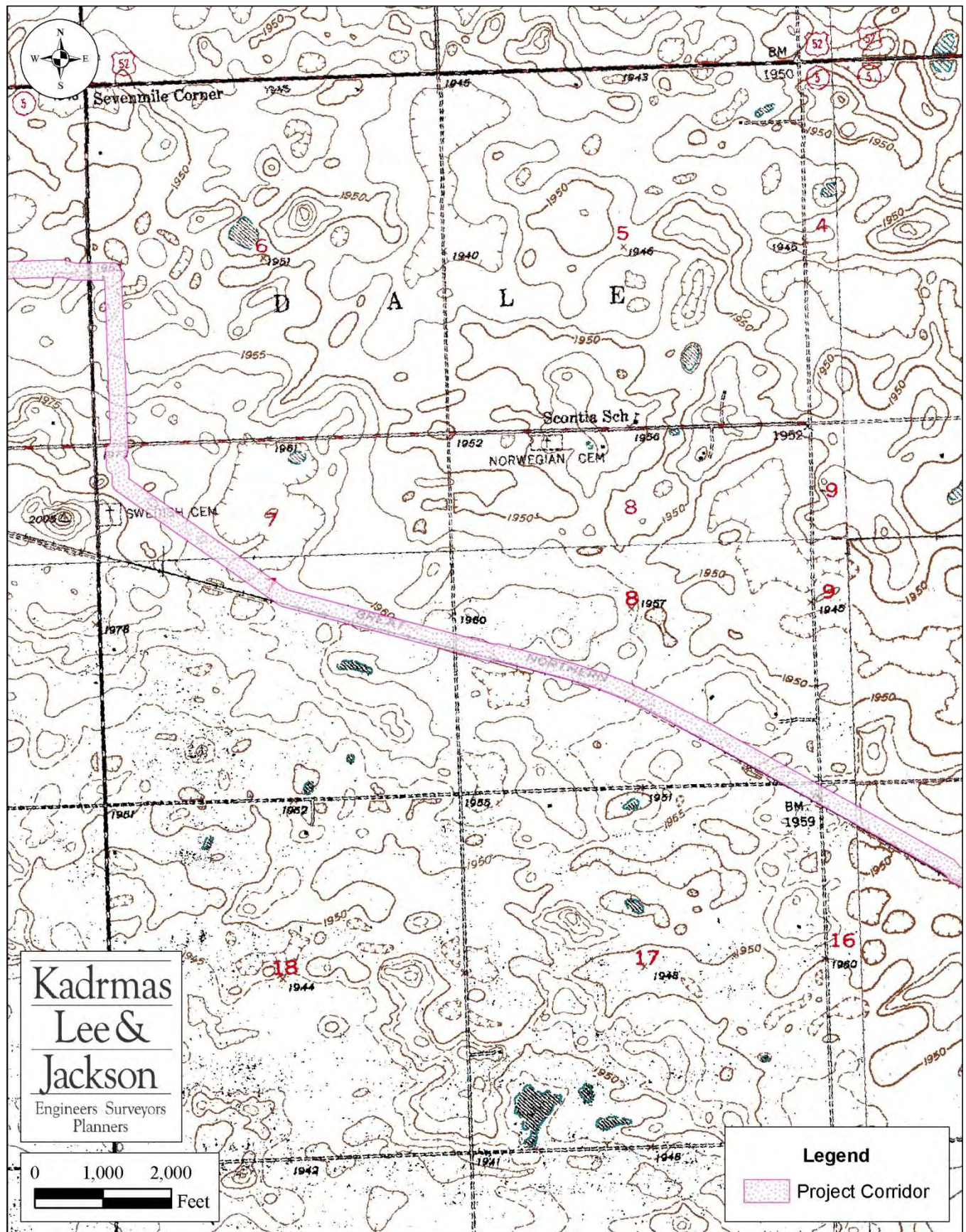
The entire proposed project area is affected by drainages either within or adjacent to the project corridor. These upland areas in the vicinity of water sources have high and moderate probability areas for cultural resources. Knob and kettle topography is common and is particularly prevalent in the eastern segments where larger expanses of upland terrain were formed by glacial moraines. In addition to the drainage and upland areas, several areas containing low lying terraces, floodplains, and bottomland topography were inventoried. These areas are thought to have provided sheltered environments during harsher winter climates.





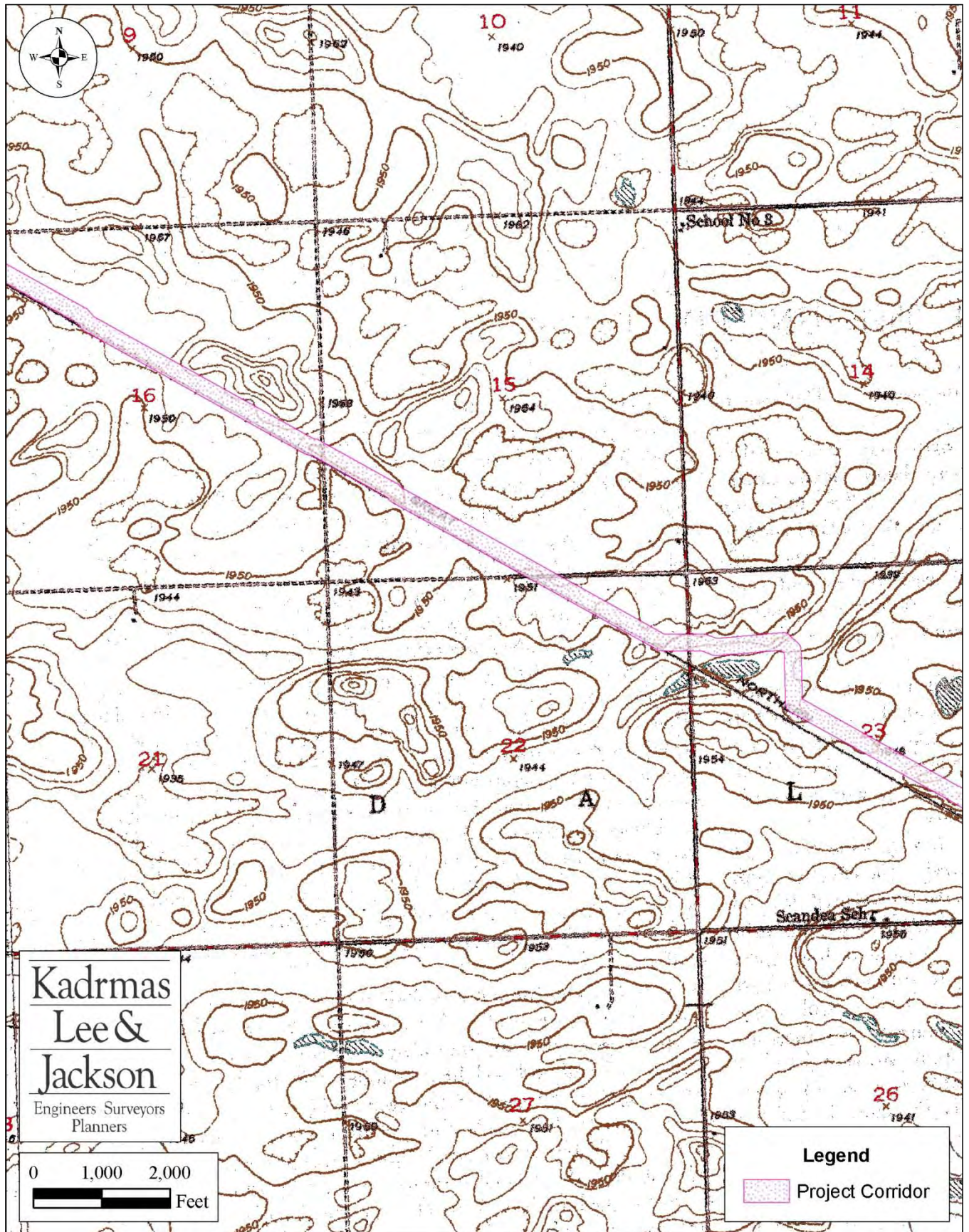
**Figure 1:** Location of the proposed undertaking as depicted on the USGS 7.5' Portal (1949) and Rennie Lake (1949) quadrangle maps.





**Figure 2:** Location of the proposed undertaking as depicted on the USGS 7.5' Flaxton (1947), Portal (1949), Rennie Lake (1949), and Woburn (1948) quadrangle maps.





**Figure 3:** Location of the proposed undertaking as depicted on the USGS 7.5' Rennie Lake (1949) and Woburn (1948) quadrangle maps.



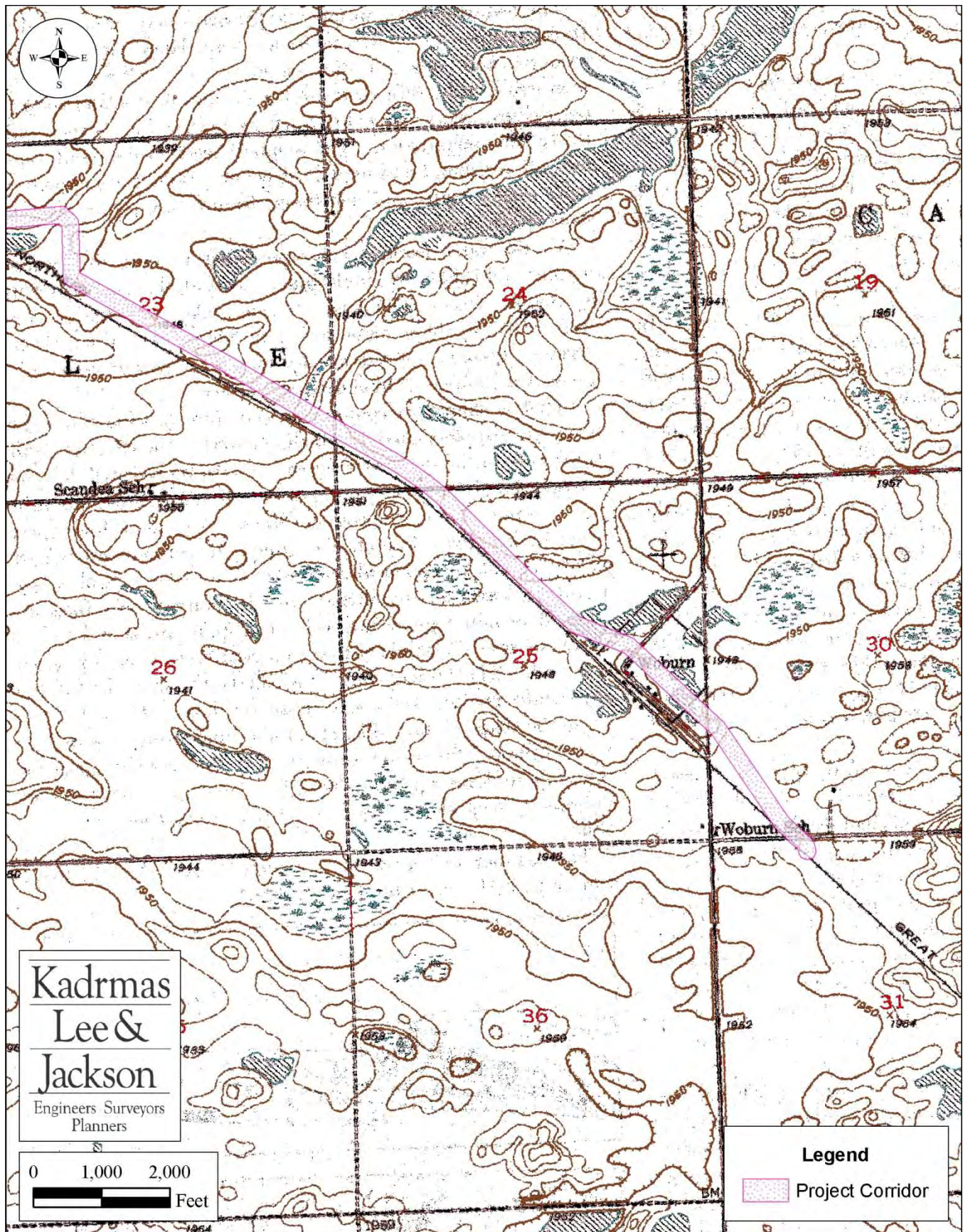


Figure 4: Location of the proposed undertaking as depicted on the USGS 7.5' Woburn (1948) quadrangle map.



Cultural resources are most frequently identified in this area on landforms overlooking waterbodies. Upland ridges, knolls, alluvial terraces, and upland plains are the landforms that appear to have been the most commonly populated within the study units during precontact times.

## **Flora**

The project corridor lies primarily within the Northern Temperate Grassland biome. In the past, this biome would have consisted primarily of mixed grass prairie, dominated by blue grama grass, needle-and-thread grass, and western wheatgrass. Gallery forests existed along floodplains of large drainage basins such as the Missouri River. Areas of transition between upland prairies and lowland floodplains frequently included juniper, green ash, and bur oak.

The vegetation regimes present today, however, do not necessarily reflect those of the prehistoric past. Agriculture, the introduction of non-native species, and modern development have all played a role in altering the present landscape as well as the associated floral communities. The existing flora of the entire project area consists primarily of introduced species within agricultural fields interspersed with areas of native grasses in pastureland. Woody draws within the project area host communities of juniper, chokecherry, saskatoonberries, gooseberries, green ash, and bur oak.

## **Fauna**

As with extant flora within the project area, the types and distributions of faunal species have also been altered over time due to human interaction. While the following list is not exhaustive of the fauna present in the project area, it represents the species most likely to have been encountered within an historic or prehistoric context. In the past, people would have commonly encountered bison (*Bison bison*), elk (*Cervus elaphus*), pronghorn (*Antilocapra americana*), and moose (*Alces alces*), as well as white tail deer (*Odocoileus* sp.). In addition, wolves (*Canis lupus*), coyotes (*Canis latrans*), jack rabbits (*Lepus* sp.), badgers (*Taxidea taxus*), weasels (*Mustela* sp., *Martes* sp.), beavers (*Castor canadensis*), ground squirrels (*Spermophilus* sp.) and prairie dogs (*Cynomys ludovicianus*) would have been present, as well as raptors, songbirds, and gamebirds.

The intermittent drainages and other more substantial watercourses in the general area would have contained various species of fish, including northern pike (*Esox lucius*), perch (*Perca flavescens*), and suckers (*Catostomus*), as well as different types of waterfowl (ducks, geese, etc.), and amphibians, and reptiles (SHSND 2008). These waterways would also have served as major sources of water for the area, concentrating the faunal resources and creating opportunistic hunting areas.

## **Other Natural Resources**

Lithic resources were available in abundance to prehistoric populations. These resources include chalcedonies, quartzites, jaspers, cherts, agatized wood, basalt, granite, and limestone.

Swan River chert, with its source across the border in Manitoba, Canada, would have been commonly found in stream gravels. In addition to these alluvially transported and glacial fill gravels, bedrock sources are exposed throughout the area. Exposed bedrock materials include pigment stones and sandstone (SHSND 2008).

## **RESEARCH GOALS/EVALUATION OF RESEARCH**

Following the mandated policies implementing the National Historic Preservation Act (NHPA [Public Law 89-665]), as amended, this proposed project was inventoried to locate any historic properties within the area of potential effect (APE). The APE is a corridor measuring 10.9 miles long by 250' wide. The width of the corridor will allow for movement of equipment, temporary storage of equipment and supplies, and all ground disturbances directly related to pipeline construction.

An additional goal of the inventory was to allow Enbridge to plan the proposed undertaking to avoid any historic properties and if not possible, to test, evaluate, and if necessary, mitigate historic properties within the proposed project area prior to construction. The goal of the inventory has been achieved. No previously documented or newly documented cultural resources were identified within the APE. Further, the methods used during the inventory to identify previously undocumented cultural resources, greatly reduces the possibility of an inadvertent discovery.

## **LITERATURE REVIEW**

On May 11, 2010, KL&J archaeologist Angie Rabe conducted a Class I Literature Review of the site records and manuscript files of the SHSND for the project area (Appendix B). A total of 29 cultural resources have been previously recorded within a one mile radius of the project area. Of these previously recorded cultural resources, most are located in and around the town of Lignite. The nearest previously recorded cultural resources is located approximately 1,300' to the north of the project corridor. In addition to the previously recorded cultural resources, the literature review revealed that five previous inventories were conducted within a one-mile radius of the project area.

Of the previously recorded cultural resources, 22 are architectural site leads, six are architectural sites, and one is a historic site. No precontact sites have been recorded in the reviewed sections.

## **FIELD METHODS/CONDITIONS**

A Class III Intensive Cultural Resources Inventory is an intensive, systematic, detailed field inspection done by, or under the direction/supervision of professional architectural historians, historians, archaeologists, and/or other appropriate specialists. The goal of this inventory effort is to make systematic efforts to identify all historic properties within the Area APE that might qualify for the National Register of Historic Places (NRHP) and/or the North Dakota State

Historic Sites Registry and to record information sufficient to enable their evaluation or to indicate what further work is necessary to accomplish their evaluation (SHSND 2006:15).

The APE for the proposed undertaking is limited to the footprint of the project. Because the pipeline will be buried with only minor above ground appurtenances (posted notices of buried pipe at road crossings, etc.), the visual impacts of the project are greatly limited following installation and reclamation of the landscape. While the standard installation corridor for similar pipelines is approximately 150' , KL&J inventoried a corridor of 250' in order to allow for avoidance of cultural resources identified within the corridor by rerouting the centerline within the 250-foot corridor.

KL&J conducted a Class III Intensive Cultural Resource Inventory for the proposed undertaking. Transects were spaced no more than 20 m apart to cover the 250' wide project corridor. Visibility along the corridor was highly variable, as the corridor consists of some areas of tilled farmland and others of native prairie. Overall, visibility was good, averaging 35%. In areas with good deposition, rodent burrows, blowouts, and other areas with exposed subsurface deposits were closely scrutinized for cultural materials.

## **RESULTS**

No previously recorded or newly recorded cultural resources were encountered during the inventory. The nearest previously recorded cultural resource, 32BKx980, is an architectural site lead located a minimum of 1,300' to the north of the APE.

## **SUMMARY AND MANAGEMENT RECOMMENDATIONS**

Kadrmass, Lee & Jackson have completed a Class III Intensive Pedestrian Inventory for a proposed pipeline installation. The Inventory was completed at the behest of Merjent, on behalf of Enbridge. A corridor measuring 10.9 miles long by 250' wide was inventoried to Class III standards.

During the course of the inventory, no previously documented cultural resource sites were encountered, and no new cultural resources were identified. As a result, KL&J recommends a finding of *No Historic Properties Affected* for the proposed undertaking as described, mapped, and photographed herein.

## REFERENCE CITED

State Historical Society of North Dakota (SHSND)

2006 *NDSHPO Manual for Cultural Resource Investigations Revised Edition*. Produced by and available from the State Historical Society of North Dakota, Bismarck.

2008 *The North Dakota Comprehensive Plan for Historic Preservation: Archaeological Component*. Produced by and available from the State Historical Society of North Dakota, Bismarck.



## **APPENDIX A: PROJECT AREA PHOTOGRAPHS**



**Figure 5:** Overview of typical terrain in the southern portion of the project, view to the northwest.



**Figure 6:** Overview of typical terrain in the southern portion of the project, view to the southeast.



**Figure 7:** Overview of typical terrain in the southern portion of the project, view to the southeast.



**Figure 8:** Overview of typical terrain in the northern portion of the project, view to the southeast.





**Figure 9:** Overview of the northern portion of the project. view to the southeast.



**Figure 10:** Overview of typical terrain along the northern portion of the project, view to the northwest.

## **APPENDIX B: LITERATURE AND FILE SEARCH RESULTS**

TOWNSHIP/ RANGE-SECTION	SITS #	SITE TYPE AND DESCRIPTION	RECORDER	MANUSCRIPT #
162-90-19		No Cultural Resources Recorded		
162/92-29		No Cultural Resources Recorded		
162/92-30		No Cultural Resources Recorded		
162/92-31		No Cultural Resources Recorded		
162/92-32		No Cultural Resources Recorded		
162/91-5		No Cultural Resources Recorded		
162/91-6		No Cultural Resources Recorded		5728, 5885
162/91-7		No Cultural Resources Recorded		5728, 5885
162/91-8		No Cultural Resources Recorded		
162/91-9		No Cultural Resources Recorded		
162/91-10		No Cultural Resources Recorded		
162/91-14		No Cultural Resources Recorded		
162/91-15		No Cultural Resources Recorded		
162/91-16		No Cultural Resources Recorded		
162/91-17		No Cultural Resources Recorded		
162/91-18		No Cultural Resources Recorded		
162/91-21		No Cultural Resources Recorded		
162/91-22		No Cultural Resources Recorded		
162/91-23		No Cultural Resources Recorded		
162/91-24		No Cultural Resources Recorded		
162/91-25		No Cultural Resources Recorded		
162/91-26		No Cultural Resources Recorded		
162/91-36		No Cultural Resources Recorded		
162/92-1		No Cultural Resources Recorded		5728, 5885, 10415
162/92-2		No Cultural Resources Recorded		5728, 8094
162/92-3		No Cultural Resources Recorded		
162/92-11	32BK49	Architectural	Ford-Dunker	5728
	32BKx600	Architectural – Site Lead	Mertz, M.	
	32BKx627	Architectural – Site Lead	Mertz, B.	
	32BKx762	Architectural – Site Lead	Mertz, B.	
	32BKx835	Architectural – Site Lead	Mertz, B.	
	32BKx865	Architectural – Site Lead	Mertz, B.	
162/92-12	32BK50	Architectural	Ford-Dunker	5728
	32BK51	Architectural	Bentley	
	32BK52	Architectural	Bentley	
	32BK51	Architectural	Bentley	
	32BKx359	Architectural – Site Lead	Mertz, B.	
	32BKx360	Architectural – Site Lead	Mertz, B.	
	32BKX394	Architectural – Site Lead	Mertz, B.	
	32BKx447	Architectural – Site Lead	Mertz, B.	
	32BKx456	Architectural – Site Lead	Mertz, B.	
	32BKx457	Architectural – Site Lead	Mertz, B.	
	32BKx458	Architectural – Site Lead	Mertz, B.	
	32BKx459	Architectural – Site Lead	Mertz, B.	
	32BKx566	Architectural – Site Lead	Mertz, B.	
	32BKx594	Architectural – Site Lead	Mertz, B.	
	32BKx597	Architectural – Site Lead	Mertz, B.	

TOWNSHIP/ RANGE-SECTION	SITS #	SITE TYPE AND DESCRIPTION	RECORDER	MANUSCRIPT #
	32BKx931	Architectural – Site Lead	Mertz, B.	
162/92-13	32BL24	Architectural	Borchert, J., et al.	
162/93-26		No Cultural Resources Recorded	Mertz, B.	6470
163/92-27	32BK30	Historic	Olson, B	6470
	32BKx253	Architectural – Site Lead	Mertz, B.	
	32BKx960	Architectural – Site Lead	Mertz, B.	
163/92-33		No Cultural Resources Recorded		
163/92-34		No Cultural Resources Recorded		6470
163/92-35	32BKX979	Architectural – Site Lead	Mertz, B.	8094
	32BKx980	Architectural – Site Lead	Mertz, B.	
	32BKX979	Architectural – Site Lead	Mertz, B.	

MS#	REFERENCE
5728	Foster, J., G. Wermers, G., and J. Borchert 1992 <i>Burke County Road Improvement Class III Cultural Resource Inventory Final Report (Project #DPI-0182(001)0701).</i>
5885	Wermers, G. 1992 <i>Williston Basin 8" Portal-Lignite Pipeline Class III Cultural Resource Inventory Burke County, ND.</i>
6470	Olson, B. 1995 <i>Portal Pipeline Cultural Resources Inventory Burke County, ND.</i>
8094	Borchert, J. 2002 <i>Highway 5, E Jct. 40 East to W Jct. 52, Highway 89, Lignite Spur, Class II Inventory Report.</i>
10415	Payette, P., P. Pflepsen, P., and P. Hendrix 2008 <i>Phase I Cultural Resource Investigation of Proposed ND-01-Lignite (44026) Telecommunications Tower Project Area, Lignite, Burke County, ND.</i>





**STATE  
HISTORICAL  
SOCIETY  
OF NORTH DAKOTA**

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John Hoeven  
Governor of North Dakota

July 27, 2010

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Valley City - Vice President

Richard Kloubec  
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Ms. Kennifer Harty  
Principal Investigator  
Kadrmas Lee & Jackson  
128 Soo Line Drive  
PO Box 1157  
Bismarck ND 58502-1157

ND SHPO REF: 10-1847 PSC Enbridge Bakken Expansion Pipeline, A Class III Cultural Resource Inventory, Burke County North Dakota in a portion of Burke County, North Dakota

Dear Ms. Harty,

We reviewed ND SHPO REF: 10-1847 PSC Enbridge Bakken Expansion Pipeline, A Class III Cultural Resource Inventory, Burke County North Dakota in a portion of Burke County, North Dakota. We concur with a "No Historic Properties Affected" and "No Significant Sites Affected" determinations, provided the project is in the mapped location.

Thank you for the opportunity to review this project. If you have any questions please contact Susan Quinnell, Review and Compliance Coordinator at (701) 328-3576, e-mail [squinnell@nd.gov](mailto:squinnell@nd.gov)

Sincerely,

Merlan E. Paaverud, Jr.  
State Historic Preservation Officer (North Dakota)  
and  
Director  
State Historical Society of North Dakota

**From:** [Picha, Paul R.](#)  
**To:** [Peg J. Boden](#)  
**Cc:** [Quinnell, Susan L.](#)  
**Subject:** RE: Review of Enbridge Project SHPO REF: 10-1847  
**Date:** Monday, August 09, 2010 11:18:32 AM

---

Dear Peg:

As long as they are avoided by the project as noted, that should be sufficient.

Sincerely,

Paul Picha

---

**From:** Peg J. Boden [mailto:PBoden@Merjent.com]  
**Sent:** Monday, August 09, 2010 11:12 AM  
**To:** Picha, Paul R.  
**Cc:** jennifer.harty@kljeng.com  
**Subject:** Review of Enbridge Project SHPO REF: 10-1847

Hi Paul,

Hope all is well. I have a quick question about a project and report that your office reviewed in July. This is the Bakken Expansion Pipeline, and the SHPO concurred with the Class III inventory report in a letter dated July 27, 2010.

I was working on the PSC application last week, and realized that there are two cemeteries in close proximity to the pipeline corridor. Merjent's GIS measured one at 185 ft from the construction corridor (St. Mary's Cemetery in Section 1, T162N R92W), and the second at 220 ft (Bethany Swedish Cemetery in Section 7, T162N R91W). I will add language in the PSC application and the Environmental Mitigation Plan about treating these two cemeteries as sensitive resources. My question to you is, would you like the report revised to include a discussion of the cemeteries? And secondly, is there any way to assure that cemeteries are counted in the 1-mile literature review? As always, thanks for you help.

Peg B.



## **Peg Boden**

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